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ABSTRACT

This booklet on asthma for physical education teachers and other school personnel offers guidelines for the maximum inclusion of students with asthma in regular physical education activities. It stresses that today's treatments can successfully control asthma so that students can participate fully in physical activities most of the time. First asthma is explained. Then guidelines for helping students control their asthma are offered. They include: recognizing asthma triggers; avoiding or controlling asthma triggers; following an asthma management plan; ensuring that students with asthma have convenient access to their medications; and modifying physical activities to match the student's current asthma status. A third section focuses on recognizing symptoms and taking appropriate action. It identifies symptoms that require prompt action, signs that may indicate poorly controlled asthma, and confusing signs that may or may not be an asthma episode. Appendices include a sample Student Asthma Action Card, information on peak flow monitoring and use of a metered dose inhaler, and a listing of resource organizations. (DB)

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asthma & physical activity in the school

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Making a Difference

National Heart, Lung, and Blood Institute
NATIONAL INSTITUTES OF HEALTH

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National Asthma Education and Prevention Program (NAEPP)
School Asthma Education Subcommittee

Paul Williams, M.D.
Chair, NAEPP School Subcommittee Working Group on
Physical Activity and School
American Medical Association

Mary Worstell, M.P.H.
Chair, NAEPP School Subcommittee
Asthma and Allergy Foundation of America

Ellie Goldberg, M.Ed.
Allergy and Asthma Network/Mothers of Asthmatics, Inc.

Sarah Kaluzny-Petroff
American Academy of Allergy, Asthma, and Immunology

Judy Golding, M.A.
American Lung Association

Pamela Luna, Dr.P.H.
American Public Health Association

Lani Majer, M.D.
American School Health Association

James Joy, Ed.D.
National Association of Elementary School Principals

Vivian Hanes, R.N., M.A., S.N.P.
National Association of School Nurses

Charlene Burgeson, M.A.
National Association for Sport and Physical Education

Rena Large, M.E.
National Education Association

Adria Thomas
National School Boards Association

Rose Cardinal, Consultant

National Heart, Lung, and Blood Institute:
Robinson Fulwood, M.S.P.H.
Virginia S. Taggart, M.P.H.
Chris Krutszch

National Asthma
Education and
Prevention Program

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"I'm unstoppable...
If I take my medicine,
I'm fine."

"Asthma...something that
we can do something about.
You can deal with it.
You can actually
make a difference."

Lifelong physical fitness is an important goal for all students. Yet students with asthma frequently restrict their physical activities—and about 1 child in every 15 has asthma. Much of this restriction is unnecessary—children with asthma can and should be physically active. This presents a challenge to classroom teachers, physical education teachers and coaches. The National Heart, Lung, and Blood Institute's National Asthma Education and Prevention Program encourages a partnership among students, families, physicians, and school personnel in managing and controlling asthma so that students can be active.

It is our hope that this booklet and its companion video, "Managing Asthma at School: Making a Difference," will help classroom teachers, physical education teachers, and coaches help their students participate fully and safely in sports and physical activities.

C. Lenfant

Claude Lenfant, M.D., Director
National Heart, Lung, and Blood Institute

What is asthma?

Asthma is a chronic lung condition with ongoing airway inflammation that results in recurring acute episodes (attacks) of breathing problems such as coughing, wheezing, chest tightness, and shortness of breath. These symptoms occur because the inflammation makes the airways overreact to a variety of stimuli including physical activity, upper respiratory infections, allergens, and irritants. Exposure to these stimuli—often called triggers—creates more swelling and blocking of the airways. Asthma episodes can be mild, moderate, or even life threatening. Vigorous exercise will cause symptoms for most students with asthma if their asthma is not well controlled. Some students experience symptoms only when they exercise. However, today's treatments can successfully control asthma so that students can participate fully in physical activities most of the time.

Asthma varies from student to student and often from season to season. This is why physical education teachers and coaches need to understand what asthma is and what the individual needs of their students are. At times, programs for students with asthma may need temporary modification, such as varying the type, length, and/or frequency of activity. At all times, students with asthma should be included in activities as much as possible. Remaining behind in the gym or library or frequently sitting on the bench can set the stage for teasing, loss of self-esteem, unnecessary restriction of activity, and low levels of physical fitness.

Helping students control their asthma

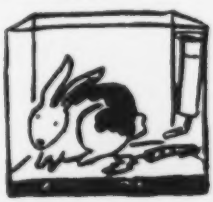
Getting control of asthma means recognizing asthma triggers (the factors that make asthma worse or cause an asthma episode), avoiding or controlling these triggers, following an asthma management plan, and having convenient access to asthma medications. It also means modifying physical activities to match the students' current asthma status.

TABLE 1. **Asthma Triggers**

- **Exercise**—running or playing hard—especially in cold weather
- **Upper respiratory infections**—colds or flu
- **Laughing or crying hard**
- **Allergens**
  - Pollens—from trees, plants and grasses, including freshly cut grass
  - Animal dander—from pets with fur or feathers
  - Dust and dust mites—in carpeting, pillows and upholstery
  - Cockroach droppings
  - Molds
- **Irritants**
  - Cold air
  - Strong smells and chemical sprays, including perfumes, paint and cleaning solutions, chalk dust, lawn and turf treatments
  - Weather changes
  - Cigarette and other tobacco smoke

Recognize Asthma Triggers

Each student with asthma has a list of triggers that can make his or her condition worse—that is, that increase airway inflammation and/or make the airways constrict, which makes breathing difficult. Table 1 lists the most common triggers.



Avoid Or Control Asthma Triggers

Some asthma triggers--like pets with fur or feathers--can be avoided. Others —like physical exercise—are important for good health and should be controlled rather than avoided.

Actions To Consider

- Identify students' known asthma triggers and eliminate as many as possible. For example, keep animals with fur out of the classroom. Consult the students' asthma management plans for guidance (see the next section).
- Use wood, tile or vinyl floor coverings instead of carpeting.
- Schedule maintenance or pest control that involves strong irritants and odors for times when students are not in the area and the area can be well ventilated.
- Adjust schedules for students whose asthma is worsened by pollen or cold air. A midday or indoor physical education class may allow more active participation.
- Help students follow their asthma management plans. These plans are designed to keep asthma under control.

Follow the Asthma Management Plan

A student's asthma management plan is developed by the student, parent/guardian, and health care provider. Depending on the student's needs, the plan (see Appendix 1 for a sample) may be a brief information card or a more extensive individualized health plan (IHP). Table 2 lists what asthma plans typically contain. A copy of the plan should be on file in the school office or health services office, with additional copies for the student's teachers and coaches. The plan--as well as the student's asthma medications--should be easily available for all on- and off-site activities before, during and after school.

TABLE 2. **Asthma Management Plan Contents**

- Brief history of the student's asthma
- Asthma symptoms
- Information on how to contact the student's health care provider, parent/guardian
- Physician and parent/guardian signature
- List of factors that make the student's asthma worse
- The student's personal best peak flow reading if the student uses peak flow monitoring (see Appendix 2).
- List of the student's asthma medications
- A description of the student's treatment plan, based on symptoms or peak flow readings, including recommended actions for school personnel to help handle asthma episodes.

Winners With Exercise-Induced Asthma

What do Nancy Hogshead, Jackie Joyner-Kersee, Bill Koch, Greg Louganis, Dominique Wilkins, and Jim Ryun all have in common?

Each is a famous athlete who has asthma. They come from diverse fields: swimming, track and field, cross-country skiing, diving, basketball, and long-distance running.

Following their asthma management plans helped these athletes become winners.

Supporting and encouraging each student's efforts to follow his or her asthma management plan is essential for the student's active participation in physical activities. Students with asthma need understanding from both teachers and students in dealing with their asthma. If students with asthma are teased about their condition, they may be embarrassed, avoid using their medication, or cut class. If students with asthma are encouraged to "tough it out," they may risk health problems or just give up.

Actions To Consider

- Get a copy of each student's asthma management plan. Review the plan to identify the role of the teacher and coach in the student's asthma management plan.
- Teach asthma awareness and peer sensitivity. For example, use the activities in the Asthma Awareness curriculum (see "NHLBI" in Appendix 4) to teach K-6 students about asthma. As students learn more about asthma, they can more easily offer support instead of barriers to their classmates with asthma.
- Consult "Managing Asthma: A Guide for Schools" for suggested activities for all grades. (See "NHLBI" in Appendix 4)

"The role of physical education teachers is in some ways probably the first line of recognition of children who have problems with their asthma...They can really help these children."

—Dr. David Evans
Columbia University

Ensure That Students With Asthma Have Convenient Access to Their Medications

Many students with asthma require two different medications: one for daily control and prevention, the other to treat and relieve symptoms. These medications are usually taken by metered-dose inhaler (see Appendix 3). Preventive asthma medications are taken daily and usually can be scheduled for before and after school hours. However, some students may need to take peventive daily medication during school hours. All students with asthma need to have their medication that relieves symptoms available at school in case of unexpected exposure to asthma triggers, or an asthma episode. In addition, students with asthma often benefit from using their inhaled medication 5-10 minutes before exercise. If accessing the medication is difficult, inconvenient, or embarrassing, the student may be discouraged and fail to use the inhaler as needed. The student's asthma may become unnecessarily worse and his or her activities needlessly limited.

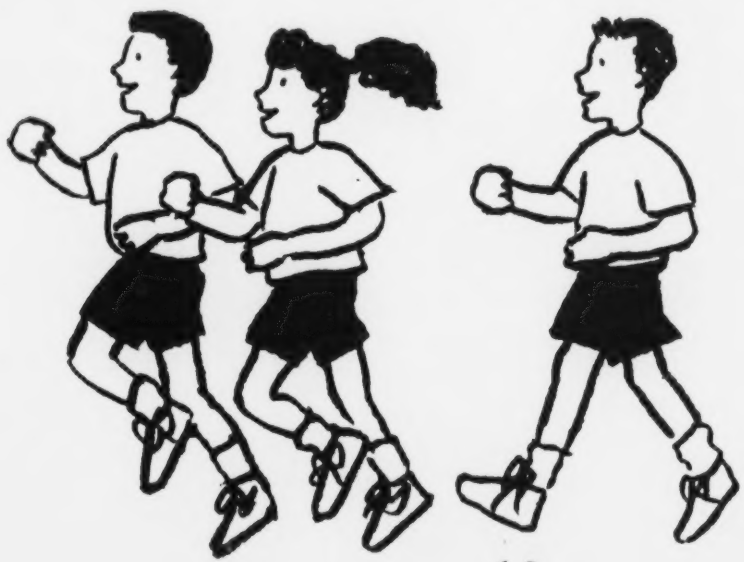
Actions To Consider

- Provide students with asthma convenient access to their medications for all on- and off-site activities before, during and after school. These medications prevent as well as treat symptoms and enable the student to participate safely and vigorously in physical activities.
- Enable students to carry and administer their own medications if the parent/guardian, health care provider, and school nurse so advise.

Modify Physical Activities To Match Current Asthma Status

Students who follow their asthma management plans and keep their asthma under control can usually participate vigorously in the full range of sports and physical activities. Activities that are more intense and sustained--such as long periods of running, basketball, and soccer--are more likely to provoke asthma symptoms or an asthma episode. However, Olympic medalists with serious asthma have demonstrated that these activities are possible with good asthma management.

When a student experiences asthma symptoms, or is recovering from a recent asthma episode, exercise should be temporarily modified in type, length, and/or frequency to help reduce the risk of further symptoms. The student also needs convenient access to his or her medications.



Actions To Consider

- Include adequate warmup and cool-down periods. These help prevent or lessen episodes of exercise-induced asthma.
- Consult the student's asthma management plan, parent/guardian, or health care provider on the type and length of any limitations. Assess the student and school resources to determine how the student can participate most fully.
- Remember that a student who experiences symptoms or who has just recovered from an asthma episode is at even greater risk for additional asthma problems. Take extra care. Observe for asthma symptoms, and check the student's peak flow if he or she uses a peak flow meter. Review the student's asthma management plan if there are any questions.
- Monitor the environment for potential allergens and irritants, for example, a recently mowed field or refinished gym floor. If an allergen or irritant is present, consider a temporary change in location.
- Make exercise modifications as necessary to get appropriate levels of participation. For example, if running is scheduled, the student could walk the whole distance, run part of the distance, alternate running and walking.
- Keep the student involved when any temporary but major modification is required. Ask the student to act, for example, as a scorekeeper, timer, or equipment handler until he or she can return to full participation. Dressing for a physical education class and participating at any level is better than being left out or left behind.

"Every spring my asthma gets real bad. I couldn't even finish the Presidential Physical Fitness Tests! But this year my teacher let me do the run inside before the air got so bad. I got a badge!"

—Student

Recognizing symptoms and taking appropriate action

Recognizing asthma symptoms and taking appropriate action in response to the symptoms is crucial to asthma treatment and control.

Symptoms That Require Prompt Action

Acute symptoms require prompt action to help students resume their activities as soon as possible. Prompt action is also required to prevent an episode from becoming more serious or even life threatening. Table 3 lists the symptoms that indicate an acute asthma episode and the need for immediate action. The student's asthma plan and the school's emergency plan should be easily accessible so that all staff, substitutes, volunteers, and aides know what to do.

TABLE 3. **Acute Symptoms Requiring Prompt Action**

- Coughing or wheezing
- Difficulty in breathing
- Chest tightness or pressure—reported by the student
- Other signs, such as low peak flow readings as indicated on the asthma management plan.

Symptoms of exercise-induced asthma (coughing, wheezing, pain or chest tightness) may last several minutes to an hour or more. These symptoms are quite different from breathlessness (deep, rapid breathing) that quickly returns to normal after aerobic exercise.

Actions To Take

- Stop the student's current activity.
- Follow the student's asthma management/action plan.
- Help the student use his or her inhaled medication.
- Observe for effect.
- **Get Emergency Help**
  - **If the student fails to improve.**
  - **If any of the symptoms listed on the student's asthma plan as emergency indicators are present.**
  - **If any of the following symptoms are present (consider calling 911):**

    —The student is hunched over, with shoulders lifted, and straining to breathe.

    —The student has difficulty completing a sentence without pausing for breath.

    —The student's lips or fingernails turn blue.

Signs That May Indicate Poorly Controlled Asthma

Students may have symptoms that do not indicate an acute episode needing immediate treatment, but instead indicate that their asthma is not under complete control. Table 4 lists these signs.

TABLE 4. **Signs That May Indicate Poorly Controlled Asthma**

- A persistent cough
- Coughing, wheezing, chest tightness, or shortness of breath after vigorous physical activity, on a recurring basis
- Low level of stamina during physical activity or reluctance to participate.

The teachers and coaches who supervise students' physical activities are in a unique position to notice signs that a child who struggles with physical activity might in fact have asthma. Because exercise provokes symptoms in most children with poorly controlled asthma, the student may need to be evaluated by his or her health care provider. It may also be that the student simply needs to follow his or her asthma management plan more carefully.

ACTIONS TO CONSIDER:

- Share observations of the symptoms with the school nurse and the student's parents or guardians. Helping students get the medical attention they need is an important way to help children become active and take control of their condition.
- Provide students convenient access to their asthma medication.

Confusing Signs: Is It an Asthma Episode or a Need for More Support?

At some times teachers and coaches may wonder if a student's reported symptoms indicate a desire for attention or a desire not to participate in an activity. At other times it may seem that students are overreacting to minimal symptoms.

It is always essential to respect the student's report of his or her own condition. If a student regularly asks to be excused from recess or avoids physical activity, a real physical problem may be present. It also may be that the student needs more assistance and support from his or her teacher and coach in order to become an active participant.

Actions To Consider

- Talk with the student to:
  - learn his or her concerns about asthma and activity
  - offer reassurance that you understand the importance of appropriate modifications or activity limits
  - develop a shared understanding about the conditions that require activity modifications or medications
- Consult with the school nurse, parent/guardian, or health care provider to find ways to ensure that the student is safe, feels safe, and is encouraged to participate actively.
- If the student uses a peak flow meter, remind him or her to use it. This may help the student appreciate his or her asthma status and appropriate levels of activity.

Student Asthma Action Card

Asthma and Allergy Foundation of America
[illegible] 11th St. N.W. Suite 402
Washington, D.C. 20005

Student Asthma Action Card

ID Photo

Name _____ Grade _____ Age _____

Teacher _____ Room _____

Parent/Guardian Name _____ Ph: (H) _____

Address _____ Ph: (W) _____

Parent/Guardian Name _____ Ph: (H) _____

Address _____ Ph: (W) _____

Emergency Phone Contact #1 _____ _____ _____

Name Relationship Phone

Emergency Phone Contact #2 _____ _____ _____

Name Relationship Phone

Physician Student Sees for Asthma _____ Ph _____

Other Physician _____ Ph _____

Daily Asthma Management Plan

- **Identify the things which start an asthma episode (Check each that applies to the student.)**

☐ Exercise ☐ Strong odors or fumes ☐ Other _____

☐ Respiratory infections ☐ Chalk dust _____

☐ Change in temperature ☐ Carpets in the room

☐ Animals ☐ Pollens

☐ Food _____ ☐ Molds

Comments _____

- **Control of School Environment**

(List any environmental control measures, pre-medications, and or dietary restrictions that the student needs to prevent an asthma episode.)

_____

_____

_____

- **Peak Flow Monitoring**

Personal Best Peak Flow number _____

Monitoring Times _____ _____ _____

- **Daily Medication Plan**

	Name	Amount	When to Use
1			
2			
3			
4			

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Emergency Plan

Emergency action is necessary when the student has symptoms such as _____, _____, _____, _____ or has a peak flow reading of _____

- **Steps to take during an asthma episode:**
  1. Give medications as listed below.
  2. Have student return to classroom if _____
  3. Contact parent if _____
  4. Seek emergency medical care if the student has any of the following:
     - ✔ No improvement 15-20 minutes after initial treatment with medication and a relative cannot be reached.
     - ✔ Peak flow of _____
     - ✔ Hard time breathing with:
       - Chest and neck pulled in with breathing
       - Child is hunched over
       - Child is struggling to breathe
     - ✔ Trouble walking or talking
     - ✔ Stops playing and can't start activity again
     - ✔ Lips or fingernails are gray or blue

If This Happens, Get Emergency Help Now!

- **Emergency Asthma Medications**

	Name	Amount	When to Use
1.			
2.			
3.			
4.			

Comments / Special Instructions

_____

_____

_____

For Inhaled Medications

☐ I have instructed _____ in the proper way to use his/her medications. It is my professional opinion that _____ should be allowed to carry and use that medication by him/herself.

☐ It is my professional opinion that _____ should not carry his/her inhaled medication by him/herself.

_____ _____

Physician Signature Date

_____ _____

Parent Signature Date

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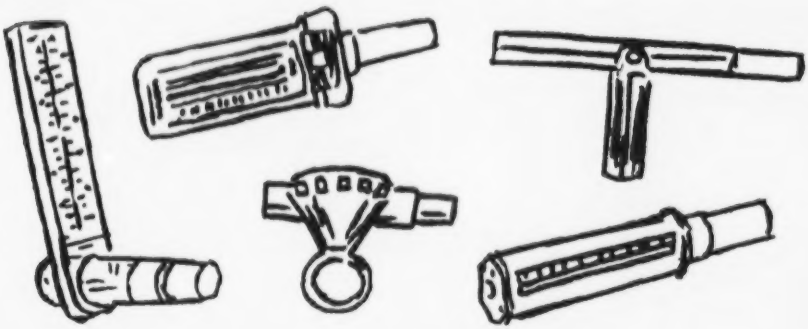
Peak Flow Monitoring

There are different types of peak flow meters available.



A peak flow meter is a small device that measures how well air moves out of the airways. Monitoring peak flow helps a student determine changes in his or her asthma and identify appropriate actions to take.

Each student has his or her personal best peak flow reading. This number should be noted in the student's asthma plan or school health file. A peak flow reading less than 80 percent of the student's personal best indicates the need for action. A student should avoid running and playing until the peak flow reading returns or exceeds 80 percent of the personal best.

A peak flow reading is only one indicator of asthma problems. Symptoms such as coughing, wheezing, and chest tightness are also indicators of worsening asthma. Follow the student's individual plan or the school plan if you observe any of the signs or symptoms listed in the asthma emergency section or in the student's own plan.

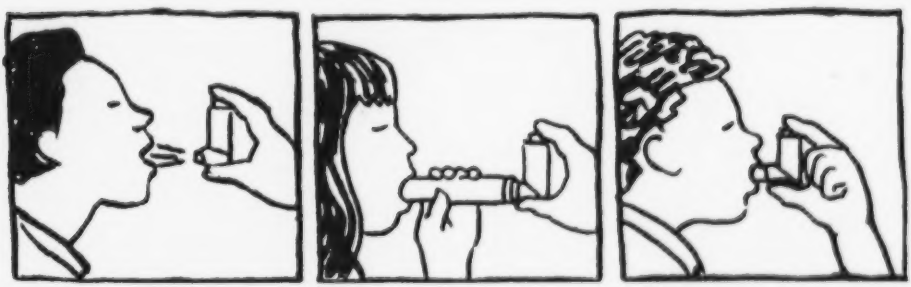
Using a Metered Dose Inhaler

It is important that students take their medications correctly. Many asthma medications are delivered by metered dose inhalers, which are highly effective, but they can be difficult to use.

The school nurse or health room technician should review proper use of the inhaler with the student. These instructions are provided for your information.

How to Use a Metered Dose Inhaler

1. Take off the cap. Shake the inhaler.
2. Stand up. Breathe out.
3. Use the inhaler in any one of these ways:



A. Open Mouth **B.** Spacer **C.** In the Mouth

4. As you start to breathe in, push down on the top of the inhaler and keep breathing in *SLOWLY* for 3 to 5 seconds.

5. Hold your breath for 10 seconds. Breathe out.

Note: Dry powder capsules are used differently. To use a dry powder inhaler, close your mouth tightly around the mouthpiece and breathe in very fast.

Organizations That Can Help You Learn More About Asthma in the Schools

National Heart, Lung, and Blood Institute
National Asthma Education and Prevention Program
PO Box 30105
Bethesda, MD 20824-0105
(301)251-1222

American Lung Association
1740 Broadway, 14th Floor
New York, NY 10019-4374
1-800-LUNG-USA

Asthma and Allergy Foundation of America
1125 15th Street, NW, Suite 502
Washington, DC 20005
(202)466-7643 or 1-800-7-ASTHMA

Allergy and Asthma Network/Mothers of Asthmatics
3554 Chain Bridge Road, Suite 200
Fairfax, VA 22030
(703)385-4403

American Association of Respiratory Care
11030 Ables Lane
Dallas, TX 75229-4593
(214)243-2272

U.S. Environmental Protection Agency
Indoor Air Division
"Indoor Air Quality: Tools for Schools"
401 M St., SW (6607J)
Washington, DC 20460
(202)233-9030

Healthy Kids: The Key to Basics
79 Elmore Street
Newton, MA 02159-1137

U.S. Department of Education
Office of Civil Rights
Washington DC 20202-1328
Civil Rights of Students With Hidden Disabilities Under Section 504 of the Rehabilitation Act of 1973 Pub #91-3, Appendix 1

The National Heart, Lung, and Blood Institute's (NHLBI) National Asthma Education and Prevention Program has several products on asthma in the school:

Managing Asthma At School: Making a Difference (videotape)

Managing Asthma: A Guide for Schools (booklet produced with the U.S. Department of Education)

Asthma Awareness: Curriculum for the Elementary School Classroom (booklet)

Managing Allergies and Asthma at School: Tips for School Teachers and Staff (booklet produced with the National Institute of Allergy and Infectious Diseases)

To order these and other publications about asthma, write: NHLBI Information Center
P.O. Box 30105
Bethesda, MD 20824-0105

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National Institutes of Health
National Heart, Lung, and Blood Institute
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